Catastrophe or New Society?

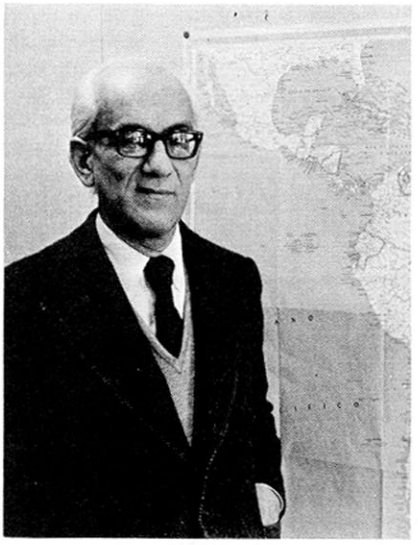


Photo: Clyde Sanger

Dr. Amilcar Herrera, project leader: "Up to our necks in realistic solutions."

My father thought he was bringing Salvation to Africa. I do not any longer know what salvation is. I only know that one man cannot find it for another man, and one land cannot bring it to another.
— from *The Tomorrow-Tamer*, by Margaret Laurence.

In 1970 several Latin American scientists were invited to a meeting in Rio de Janeiro, to sit down with members of the Club of Rome and to analyze and discuss the "World Model III", which was soon to be popularised in the book *Limits to Growth*.

It was a lively meeting, and the Latin Americans did not hide their strong feelings from Professor Dennis Meadows and his team from the Massachusetts Institute of Technology. As Amilcar Herrera says these days: "We thought it a very dangerous political document, behind a curtain of apparent objectivity."

They were not content simply to criticize. They decided they would recruit a team of Latin American experts in many different fields — from food production and population to urbanization and housing and pollution — and build their own alternative world model. They would publish its results, which would certainly in turn be a political document, but avowedly so. It would give a Third World viewpoint on the future of humanity, but it clearly would not claim to speak for all the Third World.

A year went by before a five-man consultant committee based at the Bariloche Foundation in Argentina was satisfied with a paper stating the hypotheses and the variables to be used in the model. Then for two years the 20-strong project team was hard at work, supported by an IDRC grant. During last year the text summarising the results obtained from their computer runs was revised, and translated into several languages.

In June a condensed version was published in English by IDRC under the title *Catastrophe or New Society?* (see page 19) and Dr Herrera, as project leader, addressed seminars in Toronto and Ottawa to introduce it to Canadians. Elsewhere it is being translated into Spanish, French, Italian, Portuguese (in Brazil), Japanese and Arabic. A complete English version will be published around the end of the year by a commercial publishing house.

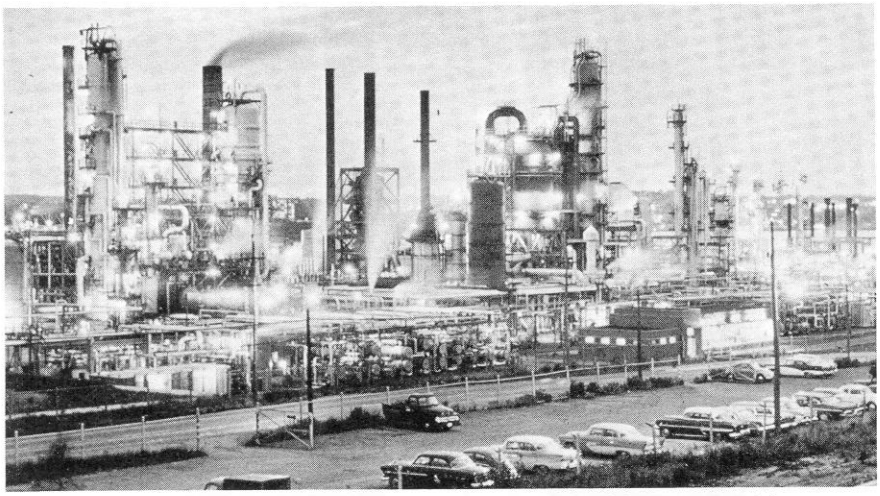
Where do the Bariloche scientists in their work diverge from those who enunciated *Limits to Growth*? In a broad sense, they turn the attitudes that informed the earlier work upside-down.

Meadows was confined inside the lines (of population growth, food production, mineral depletion and so on) that were drawn by projecting forward several decades from present statistics and current trends. The MIT approach, which was rejected at the Rio meeting, was seen as being based on the preaching that the world's main problem was rapid population growth in the Third World, and that this had to be contained if catastrophe was to be avoided.

The Bariloche group took issue with this premise on several grounds. For millions of people, oppressed with hunger and disease, catastrophe is a present condition rather than a future fear. As Herrera put it in a seminar: "We're living in a catastrophe now; it's not a question of waiting 80 years to see one." Then, because the MIT model dealt with statistics in global aggregates, it took no account of the fact that 25 percent of the world's population (the people in the industrialised countries) was using up more than 85 percent of the world's nonrenewable resources. This was a bigger cause for explosions on this globe than population growth.

The group also disagreed with the

Clyde Sanger



The industrialized countries use up more than 85 percent of the world's non-renewable resources — the real cause of the problem?

Photo: Roberta Borg

Everyone should have at least 3000 calories of food and 100 grams of protein a day.

view that there was a close correlation between a country's per capita income and its population growth rate. They pointed to Uruguay, whose GNP worked out at only $600 per capita but whose population was increasing more slowly than that of Western Europe. The likeliest reason for this, they argued, was the high level of social security that had long been available in Uruguay.

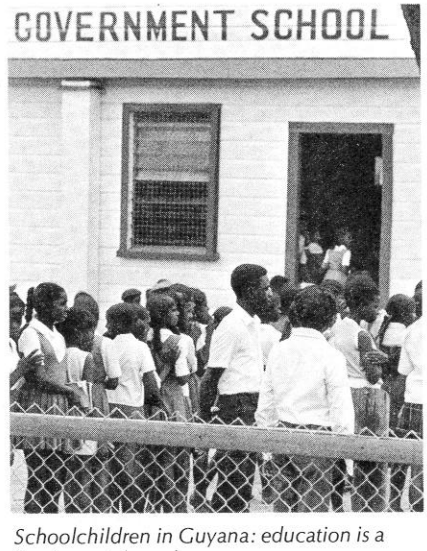
Out of this came a basic hypothesis that the Bariloche group set out to test in their study: that the only truly adequate way of controlling population growth is by improving basic living conditions.

So they cut free of the rigidity of projections, which Herrera thinks anyway soon become pretty meaningless, since they tend to assume that socio-political structures endure unaltered, whereas they are in a constant state of change. And they flew off to a normative vantage-point, declaring that every human being, by the simple fact of his or her existence, had an absolute right to the satisfaction of basic needs in housing, health, food and education.

Education was included as a fundamental need, because in the egalitarian society the Latin American team posited there should be full participation by the people in major social decisions. And, for the reason that different peoples will vary in the paths they choose to move from the present unsatisfactory (the word "evil" creeps in occasionally) system of maldistribution of resources to these utopian societies, the Bariloche model does not explore the mechanisms for bridging from the present to this future; rather, it was set up to test whether it is possible to liberate society from underdevelopment, by satisfying these basic human needs for everyone. It is not a political blueprint; in the chapter entitled "The Current World — Misery and Overconsumption", the socialist model is criticized for offering too little participation, while the capitalist model is criticized for creating dependency and inequality. It is more a vision of what is possible.

The rest was the grinding work of putting it all into mathematical terms, building the economic and the demographic sub-models, and then assembling the full model. Hugo Scolnik, Deputy Director of the project was responsible for the mathematical part of the model and took over direction of the project for a time while Dr Herrera was working at Sussex. Then the main part in compiling and editing the findings in book form reverted to Amilcar Herrera.

In putting the basic human needs into quantifiable terms, the team decided that everyone should have 3000 calories of food and 100 grams of protein a day; that the goal for education should be 12 years of schooling, enough to reach "the point of educational autonomy" with the ability to make group as well as individual decisions in society. For housing, an initial minimum standard was set for a family of five in developing countries of 50 square metres of shelter with adequate sanitation, and a higher minimum in developed countries of 70 square metres for an average family of 3.5 people. These three goals were deliberately set above survival level, because the Bariloche group set its sights on a society where *human* needs would be satisfied.



Schoolchildren in Guyana: education is a fundamental need.

Unlike the Meadows model, which treated the world as a global aggregate, this model broke the world down into four blocks, and tested in each unit the physical feasibility of reaching the goals of basic human needs. They originally thought of simply dividing the world between the developed and developing parts, but ended by separating the latter three ways: Latin America and the Caribbean, Africa and Asia. They treated the four blocks as independent units (which has led to some criticism that the model gives too little account of inter-block trade). The model in fact stipulates that, while there will be interblock trade, there will be no net transfer of capital.

Stipulating that the four blocks should function separately, that the developed world should (for the purposes of the model) cease to draw its natural resources from the other units makes an ironic reversal of the "lifeboat" theories of Hardin and others: in the egalitarian, non-consumerist world of the Bariloche vision, each of the four blocks would have its own lifeboat, provisioned with its own stores and obliged to look after its own population. As it turns out, the crew in the developed world's lifeboat do not starve, although they pull in their belts.

The chapter on the physical limits to development, in particular the section on mineral reserves, may prompt some skepticism although Dr Herrera, a geologist by training, was not challenged on this score during seminars. In this chapter the team maintains that potential reserves of uranium and thorium are sufficient to satisfy energy requirements for a practically indefinite period, and that the one type of pollution that will not respond to corrective measures is thermal pollution. The effects of this man-made problem, however, are difficult to mea-

sure accurately, and so far they have been compensated for by the natural processes of the cooling of the atmosphere.

The population sub-model was an innovation that gave the Bariloche team some headaches. But they were determined to explain demographic evolution as a function of a set of socio-economic variables, rather than simply insert population forecasts as an outside factor. Eventually they built their sub-model in which the main demographic variables — life expectancy at birth, birth-rates and average family size — are expressed as functions of seven socio-economic variables: school enrolment; housing; calories and protein intake; population employed in agriculture, or in secondary industry; and a measure of urbanization. The sub-model assumes that rural populations will gradually be grouped into communities of a size that makes it possible to provide essential services, the process of "villagization" on which Tanzania and other countries are now engaged.

To work the model, the team decided to use as the indicator life expectancy at birth (rather than, say, GNP that is most often used in economic planning). They saw it as the indicator that best reflects general conditions of life regardless of country, and an accurate measure of how well the basic human needs were being satisfied. While Meadows' controller allocated labor and resources to production in order to keep supply and demand in balance, their controller made its year-by-year allocations in order to meet the goals of the basic human needs and to optimize life expectancy at birth.

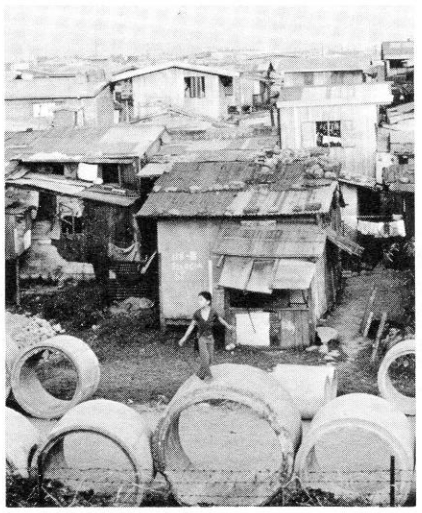


Photo: Neill McKee

Housing: minimum standards of shelter with adequate sanitation.

Their conclusions are cheerful ones. There are no physical barriers in Latin America or Africa that would prevent attainment of these basic needs by the early 1990s and the year 2008 respectively. The more populous Asia presented a problem, not in housing or education, but in food production — if yields were calculated at 4 tons per hectare, but no problem at 6 tons. (If these figures seem high, the team points out they are only about half those achieved in Japan and elsewhere).

The message behind the book is plain. While there are no physical barriers to the elimination of poverty and underdevelopment, there are severe political and social constraints in present systems. Amilcar Herrera put it clearly in Toronto: "Only with very deep changes in social and political conditions is there any hope."

The Bariloche model has received some criticism. When it was first presented to a three-day meeting of the International Institute for Applied Systems Analysis at Baden, Austria, in October 1974, the point was made that technological progress should be incorporated as a variable, and this was done during the revision period.

Another criticism widely made has been that the controller optimizes on a year-by-year basis, rather than over the entire time-period (1960 to 2060) of the model. Dr Herrera is sensitive to this point, and has spent time in seminars explaining that they took the "myopic" approach because the computer requirements made the long-term approach impossible. He points out, too, that no economy in the world is planned for 100 years.

Finally, there is the criticism that it is all too Uptopian, and "not realistic". Amilcar Herrera answers this type of criticism head-on. Certainly the model is utopian, he says; but it is not a mere intellectual toy, like some of the earliest utopian writings. He prefers to make comparisons with the 19th century socialists, who he says embodied the aspirations of the great mass of the people. As for not being realistic, he retorts that there are two kinds of "realistic solution": the one he rejects is "the kind that can be realized without disturbing the present equilibrium. In Latin America we are submerged up to the neck in such realistic solutions". Since there are no easy solutions to the present world crisis, the realism he and the Bariloche team favor has to match in imaginativeness the size of the problem. Indeed, their book ends with a quotation from John Stuart Mill: "For a great evil, a small remedy does not produce a small result; it simply does not produce any results at all".

They are not offering any country a packaged Salvation, nor setting themselves up as a "tomorrow-tamer" with all the answers. But they are missionaries enough to want to mobilize public opinion and point in a general direction. With their work being translated into seven languages, they are certain to stir an amount of public discussion; The International Labour Organization is already starting to use the model, and Egypt has already responded by applying parts of the model to its present situation. The Bariloche team seems to have made its mark. □

Photo: Neill McKee

How long will they live? The team chose life expectancy at birth as a basic indicator of the general conditions of life regardless of country.